



Determinants of changes in income-related health inequalities among working-age adults in Japan, 1986–2007: Time-trend study

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ABSTRACT

This study aimed to quantify the contributions of the factors that have influenced changes in income-related health inequalities. We used data from a nationally representative sample of Japanese men and women aged 20–59 years who participated in eight repeated cross-sectional surveys between 1986 and 2007. A concentration index (CI) was used to measure income-related inequalities in self-rated health (SRH) and decomposed into contributing factors. We then examined temporal changes in CIs and their contributing factors. Results showed that income-related inequalities in SRH, unfavourable to low-income groups, persisted throughout the study period. Despite widening income inequalities, inequalities in SRH narrowed during the period of economic stagnation since the late 1990s because of the profound deterioration in SRH among middle- to high-income groups. Decomposition analysis showed that income itself and unemployment or economic inactivity were the most important contributors to inequalities in SRH for both sexes at almost all time points. However, from 1986 to 2007, the relative contribution of income to these inequalities decreased from 78% to 14% in men and from 85% to 38% in women. By contrast, the relative contribution of unemployment or economic inactivity increased from 18% to 77% in men and from 10% to 31% in women. Our results suggest that a reduction in avoidable health inequalities could be achieved by reducing the influence of unemployment or economic inactivity on health.

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Introduction

Monitoring the trends and determinants of health inequalities over time is an essential step for initiating effective political action to reduce these inequalities (Commission on Social Determinants of Health, 2008). In recent decades, inequalities in morbidity and mortality among all socioeconomic groups have persisted or widened in many developed countries (Kunst et al., 2005; Mackenbach et al., 2003; Singh & Siahpush, 2006). Growing evidence indicates that these health inequalities may be attributable to macro-level social, economic, and political changes (Blakely, Tobias, & Atkinson, 2008; Hong, Knapp, & McGuire, 2011; Khang, Lynch, Yun, & Lee, 2004; Kim, Jung-Choi, Jun, & Kawachi, 2010; Plavinski, Plavinskaya, & Klimov, 2003).

Japan has experienced serious economic crises and widening income inequalities over the past two decades. Although Japan has

long been considered a healthy and egalitarian society (Marmot & Smith, 1989), the situation may be changing. Japan's economy slowed in the wake of the bursting of the 'asset price bubble' in the late 1980s and early 1990s, and it was further weakened by the Asian economic crisis in 1997–1998, which led to negative economic growth and a steep rise in unemployment as shown in Fig. 1 (Chang, Gunnell, Sterne, Lu, & Cheng, 2009; Corsetti, Pesenti, & Roubini, 1999). This latest financial crisis together with labour market deregulation increased not only unemployment but also the number of lower-paid 'precarious' workers (i.e. part-time, fixed-term, and temporary employees) (Ministry of Internal Affairs and Communications, 2012a), creating labour market dualism in terms of wages and benefits, and thereby increasing the unequal distribution of income among workers. According to Organisation for Economic Co-operation and Development (OECD) report in 2006, income inequality in Japan has risen steadily since the mid-1980s, from well below to slightly above the OECD average (OECD, 2006).

Only a few Japanese studies have thus far examined trends in socioeconomic health inequalities using data that cover the post-

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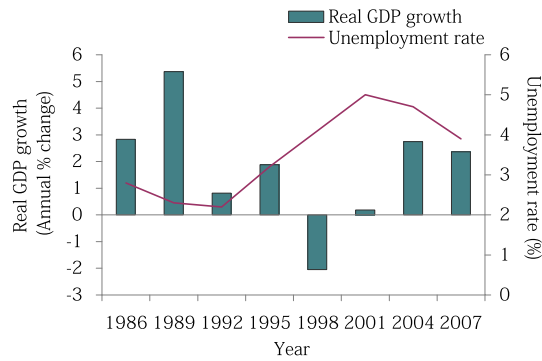


Fig. 1. Economic growth and unemployment rate in Japan, 1986–2007. Source: World Development Indicators (The World Bank, 2012); Labour Force Survey (Ministry of Internal Affairs and Communications, 2012a).

1998 economic stagnation period, and these studies have yielded conflicting results. An ecological study reported that inequalities in mortality narrowed until 1995 but widened from 1995 to 2000 (Fukuda, Nakao, Yahata, & Imai, 2007). By contrast, another study using individual-level data reported that inequalities in self-rated health (SRH) actually narrowed after the crisis; however, this closing of the gap only occurred because of the serious deterioration in SRH among middle and higher socioeconomic groups rather than an improvement among lower ones (Kondo, Subramanian, Kawachi, Takeda, & Yamagata, 2008). Furthermore, a recent Japanese study reported that the patterns of occupational inequalities in mortality were reversed from those commonly observed in western countries after the crisis because of rising mortality among management and professional workers (Wada et al., 2012).

Despite mounting evidence of trends in health inequalities, few studies have focused on the factors that are influencing these changes over time not only in Japan but also in other developed countries (Gravelle & Sutton, 2003; Vallejo-Torres & Morris, 2010). The objectives of this study were (1) to examine the trends in income-related inequalities in SRH and (2) to quantify the contributions of determining factors to these changes between 1986 and 2007 in a national sample of Japanese adults. We hypothesised that inequalities in SRH would change in tandem with social, economic, and political changes and that the relative contribution of income to inequalities in SRH would increase over time.

Methods

Data source

We used data from eight cross-sections of the Comprehensive Survey of Living Conditions (CSLC) for 1986–2007. This nationally representative survey of households has collected detailed information on household demographics, health status, income, and assets every three years since 1986. The data collection methods used by the CSLC have been described in detail elsewhere (Nishikitani, Tsurugano, Inoue, & Yano, 2012). Eligible respondents were all household members within census tracts selected throughout Japan using a cluster sampling design. The CSLC is carried out on household demographics and health status across approximately 5000 census tracts that include approximately 280,000 households, from which it randomly selects and further surveys roughly 40,000 households on income and assets. Trained personnel collect data through a combination of interviews and self-administered questionnaires. Response rates for the household demographics and health status survey and the income and assets

survey ranged from 80% to 91% and 68% to 85% between 1995 and 2007, respectively (the equivalent figures for 1986–1991 were not released by the government). We restricted our analyses to the working-age population (aged 20–59 years) who had complete information on the variables of interest. The resulting sample size ranged from 54,786 respondents in 1986 to 24,884 respondents in 2007. Ethics approval was not required because this is a retrospective analysis of a national surveillance data that is free of personally identifiable information.

Variables

Our health measure was SRH, which was assessed by answers to the same single question in all surveys: ‘What is your current health status: excellent, very good, good, fair, or poor?’ Following previous studies based on data from the CSLC (Kondo et al., 2008; Nishikitani et al., 2012) and measuring socioeconomic inequalities in SRH (Nedjat, Hosseinpoor, Forouzanfar, Golestan, & Majdzadeh, 2012), we classified these responses into the following two categories: poor (‘fair’ or ‘poor’) and good (‘excellent’, ‘very good’, or ‘good’). Our socioeconomic measure was annual equivalent disposable household income in line with the study by van Doorslaer and Koolman (2004). The after-tax incomes, including benefits, of all household members during the previous year were summed, and the total was adjusted for household size using an equivalence elasticity (i.e. the power by which economic needs change with household size) of 0.5. Results were expressed in 2007 Japanese yen using the consumer price index (Ministry of Internal Affairs and Communications, 2012b).

For the decomposition analysis, this study selected the following five well-known determinants of socioeconomic inequality and health (Commission on Social Determinants of Health, 2008; OECD, 2008):

- (1) Age (20–29, 30–39, 40–49, 50–59 years);
- (2) Marital status (married, never married, widowed, divorced);
- (3) Household type (multi-person, one person);
- (4) Economic activity status (permanent worker, fixed-term worker, executive, self-employed worker, homemaker, student, unemployed or other economically inactive person); and
- (5) Income.

The CSLC only began to distinguish between unemployed persons (not working, but seeking work) and other economically inactive persons (early retired, disabled, or other) in the 2004 survey. However, the available data suggest that approximately half this category comprises unemployed persons. Because data on male homemakers were sparse and available only in the surveys from 2001 to 2007, male homemakers were included in the category of ‘other economically inactive person’. In addition, income was transformed to a logarithmic scale in the decomposition analysis.

Statistical analysis

We performed all analyses separately by sex because of the different trends among the key variables. First, we described the trends in the prevalence of poor SRH, income inequality, and income-related inequality in SRH from 1986 to 2007. The overall and income-specific age-standardised prevalence of poor SRH was estimated by a direct method using the 1985 Japanese model population (Ministry of Health, Labour and Welfare, 1988–2009). Income inequality was measured using the Gini coefficient, which ranges from 0 (most equal distribution) to 1 (most unequal distribution) (Wagstaff, Paci, & van

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